

**REMARKS**

This amendment is filed in response to the Office Action dated May 5, 2003. This application should be allowed and the case passed to issue.

No new matter is introduced by this amendment. The amendment to claim 3 is supported in the specification at page 3, lines 21-28.

Claims 3-5 are pending in this application. Claim 4 is allowed. Claims 3 and 5 are rejected.

Initially, the Examiner is thanked for the courtesy of granting a telephone interview with the undersigned on May 19, 2003. During the interview, the Examiner alleged that the specification does not enable one of ordinary skill in this art to make a semiconductor element that estimates an energy spectrum of the  $\alpha$  rays with the aid of counting or by measuring peak height distribution using a current flowing through said PN junction. The Examiner explained that a circuit that estimates the energy spectrum is not clearly described.

***Claim Rejection Under 35 U.S.C. § 112***

Claim 3 is rejected under 35 U.S.C. § 112, first paragraph, because the specification allegedly does not appear to describe a "semiconductor element to estimate an energy spectrum of the  $\alpha$  rays with the aid of counting or by measuring peak height distribution using a current flowing through said PN junction." This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The specification describes the semiconductor element to estimate an energy spectrum of the  $\alpha$  rays on page 6, particularly lines 2-15 and the components of a circuit to estimate an energy spectrum of the  $\alpha$  rays on page 3, lines 21-28. Although Applicant

believes that claim 3, as previously presented, fully comports with the requirements of 35 U.S.C. § 112, in order to advance prosecution of this application, claim 3 has been amended to more particularly specify the analyzing circuit portion of the semiconductor device.

An aspect of the present invention, per claim 3, is a semiconductor device for detecting neutrons comprising a semiconductor substrate and a boron containing layer formed on the semiconductor substrate containing isotope  $^{10}\text{B}$ . A PN junction is formed on a surface area of the semiconductor substrate below the boron containing layer. Electron - positive hole pairs are generated in a depletion layer of the PN junction by  $\alpha$  rays generated by a reaction between the neutrons and the isotope  $^{10}\text{B}$ . The neutrons are detected on the basis of the quantity of electric charge of the electron - positive hole pairs. The semiconductor device further comprises an analyzing circuit portion on the semiconductor substrate in a region other than the region where the neutrons are detected. The analyzing circuit portion includes an amplifier circuit for amplifying a fine signal and a single channel height analyzer circuit for selecting only a pulse with a particular height to estimate an energy spectrum of the  $\alpha$  rays with the aid of counting or by measuring peak height distribution using a current flowing through the PN junction.

The Supreme Court set the standard for determining whether the specification meets the enablement requirement. That standard is whether undue experimentation is needed to practice the invention. *Mineral Separation v. Hyde*, 242 U.S. 261, 270 (1916); *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404, (Fed. Cir. 1988); MPEP 2164.01. Applicant submits that in light of the instant disclosure, one of ordinary skill in this art would be able to make and use the claimed invention. In particular, Applicant submits that one of ordinary skill in this art would recognize that the amplifier circuit and the single channel height

analyzer estimate an energy spectrum of  $\alpha$  rays, and one of ordinary skill in this art would be able to make and use the analyzing circuit portion that estimates the energy spectrum.

There are many factors that an Examiner must consider when reaching a conclusion of lack of enablement. These factors include:

- (A) The breadth of the claims;
- (B) The nature of the invention;
- (C) The state of the prior art;
- (D) The level of one of ordinary skill;
- (E) The level of predictability in the art;
- (F) The amount of direction provided by the inventor;
- (G) The existence of working examples; and
- (H) The quantity of experimentation needed to make or use the invention based on

the content of the disclosure.

*Wands*, 858 F.2d at 737; 8 USPQ2d at 1404.

The Examiner's analysis of enablement must consider all the evidence related to each of these factors. Focussing on one or only several of the factors is not sufficient to determine whether an invention is not enabled. MPEP § 2164.01(a). There is no indication in the Office Action that the Examiner considered the above factors in reaching the conclusion of lack of enablement.

In order to make a rejection for lack of enablement, the Examiner has the initial burden to establish a reasonable basis to question the enablement provided for the claimed invention. *In re Wright*, 999 F.2d 1557, 1562, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993). The examiner must provide a reason as to why the scope of protection provided by a claim is not

adequately enabled by the disclosure. A specification disclosure which contains a teaching of the manner and process of making and using an invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be relied on for enabling support. *See In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (C.C.P.A. 1971); MPEP § 2164.04. Applicant submits that one of ordinary skill in this art would know how to make and use the invention of claim 3 in light of the instant disclosure. The Examiner has not shown that the invention of claim 3 is not enabled for one of ordinary skill in this art. Applicant submits that claim 3 fully comports with the requirements of 35 U.S.C. § 112.

***Allowable Subject Matter***

Claim 4 is allowed. Applicant gratefully acknowledges the indication of allowable subject matter.

Applicant submits that claims 3 and 5 are allowable as claim 3 is rejected only under 35 U.S.C. § 112, first paragraph, and the Examiner has failed to meet the burden of proving that claim 3 is not enabled by the instant specification.

In light of the above remarks, this application should be allowed and the case passed to issue. If there are any questions regarding these remarks or the application in general, a telephone call to the undersigned would be appreciated to expedite prosecution of the application.

09/960,356

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read "Bernard P. Codd".

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